

Volume 24, Number 3

DINOSAUR RIDGE



Ridge Report – Fall 2012

FRIENDS OF DINOSAUR RIDGE 2012

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Robert Reynolds, Ph.D.	Geologist, Denver Museum of Nature & Science
Kermit Shields	Geologist (Ret.)
Louis Taylor, Ph.D.	Paleontologist, Denver Museum of Nature & Science

The mission of Friends of Dinosaur Ridge is to preserve the paleontologic, geologic, and historic resources on Dinosaur Ridge, Triceratops Trail and the outlier sites in the Morrison - Golden Fossil Areas National Natural Landmark and to educate the public about these resources.

Major Contributors:

Rocky Mountain Association of Geologists (RMAG)
 Greater Denver Area Gem & Mineral Council
 Jeffco Conservation Trust Funds
 Scientific & Cultural Facilities District (SCFD)
 Gates Family Foundation
 Adolph Coors Foundation
 MDU Foundation
 Western Interior Paleontological Society (WIPS)
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- Research and Publications
- Education
 - K-16
 - Exhibits
- Tours, Events, Posters, Signs
- Marketing
 - Outreach
- Volunteer and Membership
 - Membership
 - Volunteers
- Finance
 - Accounting
 - Fundraising
 - Gift Shop
- Planning and Budget
- Governance
- Preservation
 - Curation
 - Facilities
- Advisory Panel

Committees:

- Beth Simmons and Martin Lockley
- Marsha Barber
- Erin LaCount
- Tom Moglestad
- Tom Moglestad
- Tom Moglestad
- Tom Moglestad
- Kermit Shields
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- Amber Cain
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- Shawna Saeedian
- Joe Tempel and Clare Marshall
- Roger Bennett
- Kathleen McCoy
- Norb Cygan
- Chris Carroll
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- Bob Reynolds

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• Programs & Operations Director	Tom Moglestad
• Tour Program Coordinator	Erin LaCount
• Volunteer Coordinator	Amber Cain
• Membership/Exhibits	Clare Marshall
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• Lead Guide/Birthdays/G.S. Clerk	Bobbi Kilgore
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- Dan Fanelli
- Sue Kaberline
- Thornton Geise
- Dan Fogerty
- Kimber O'Brien
- Kevin Thirouin
- Andy Oligmueller
- Greg Huston

Snack Shack

- Leah Cardenas
- Justin Hofferber
- Sierra Goldie
- Katy McHugh
- Taylor Cain
- Hunter Wood



**Scientific & Cultural
Facilities District**

Making It Possible.

Cover Photo:

Three-year-old Anthon Litton, a recent visitor to Dinosaur Ridge courtesy of the Make-A-Wish Foundation, holds a prized fossil – a coprolite.

Photo by Erin LaCount

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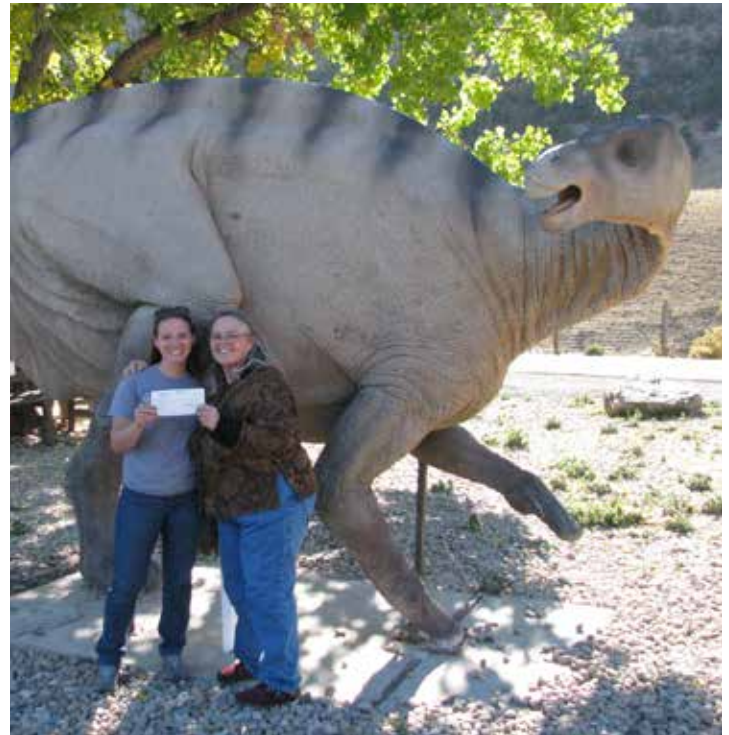
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Xcel Energy Donation

FODR employee Amber Cain (left) accepting a check for \$1000 from Xcel Energy representative Janet Franz. Xcel Energy chose the September FODR DDD event as one of its Day of Service Sites and provided 12 volunteers in addition to their generous donation.

COLORADO GIVES DAY

A Day to Donate -- Plus

Tuesday, December 4, 2012, beginning at 12:00 am and ending 24 hours later, is Colorado Gives Day. Your donation to FODR is supplemented by the FirstBank Incentive fund. To donate to FODR go to www.givingfirst.org and type in Friends of Dinosaur Ridge in the menu on the left side and click on "GO. This takes you to a page on which you will see our name and the opportunity to click on "Donate Now."

From this point on, it is like making an online purchase. You simply type in the amount you wish to donate and follow the directions

Help FODR Save Money

Postage costs continue to increase. Subscribing to The Ridge Report online will allow FODR to use its limited funds for education and preservation. Please send you e-mail address to Tom Moglestad at Tom_Moglestad@dinoridge.org

MANAGEMENT REPORTS

PRESIDENT'S MESSAGE

The Friends of Dinosaur Ridge may have taken another major step forward. We have made an offer to purchase a one-acre property with a building suitable for a visitor center near the west side of Dinosaur Ridge. If our offer is accepted, we will become landowners, complete with a mortgage and an expanded vision for the future.

This potential satellite visitor center sits on the northwest corner of County Highway 93 and Entrance #1 to Red Rocks Park, directly across the highway from the Dinosaur Ridge west entrance. The building's approximately 4,000 square feet of floor space nearly equals that of our current visitor center, and is divided equally between the main floor and the basement.

FODR has experienced double digit rates of growth since 2006. Consequently, we are bursting at the seams; we have reached the maximum growth potential of the current visitor center.

Purchasing the property and building will allow FODR to grow by establishing a satellite visitor center, allowing us to meet several goals of the recently approved Strategic Plan. First, a satellite visitor center would give us a second venue, to meet our growth demands. It could also house a second gift shop, potentially increasing revenue. Closing Alameda Parkway in 2008 nearly eliminated easy access from the west side of the Ridge, removing the capture of the many visitors to Red Rocks Park.

Secondly, the increased visitation to Dinosaur Ridge has created a need for additional staff. The limited space at the current visitor center has forced us to use part of the Chevron Classroom as office space, disrupting both staff and concurrent meeting attendees. The addition of the space at the satellite visitor center would allow us to move some staff offices, resulting in increased productivity.

A third concern has been the slowdown in designing and completing the proposed new visitor center on the east side of Dinosaur Ridge. The pending lease agreement between

JEFFCO and FODR will expire in November, 2018, putting FODR in jeopardy of losing the current visitor center before there is a replacement facility. The FODR Strategic Plan included contingencies for such an occurrence. One of the contingencies was to develop a second visitor center. The satellite visitor center would satisfy this need on a temporary basis.

When the new and larger visitor center is completed on the east side of the Ridge, we plan to use the satellite visitor center to complement the services provided there. Also, the presence of a visitor center on the west side may also allow us to design a somewhat smaller main visitor center on the east side. This would help accomplish the Jefferson County's desire for a smaller footprint and also decrease the cost of a new visitor center.

The visitor center on the west side could concentrate on the geology and paleontology of the Morrison Formation, emphasizing the dinosaur bones and their discovery by Arthur Lakes, perhaps including visits to Lakes' Quarry #1. It could also serve as the base for geological tours of Red Rocks Park and tours of the west side of the Ridge.

The bottom line is that FODR would have a mortgage of approximately \$220,000, at 4.5% interest rate for 15 years. In addition, we would have to pay only the interest until the necessary renovations are completed. Payments then would be approximately \$2,000 per month.

This is an exciting opportunity for the Friends of Dinosaur Ridge to grow and offer additional educational experiences. We hope that our offer will be accepted so we can bring many of our visions to fruition. If you would be interested in helping to raise funds for the approximate \$120,000 down payment please contact either Joe or me.



— SAM BARTLETT

MANAGEMENT REPORTS

EXECUTIVE DIRECTOR'S REPORT 2011

Status of the Dinosaur Track Pavilion on Dinosaur Ridge

Sam Bartlett and Joe Tempel met with representatives of Jefferson County on October 18th to discuss the County's concerns with the preservation of the track site. **Richard Wilshusen** and **Joe Saldibar**, representatives of History Colorado, expressed concerns about applying a preservative to the surface and stated that a protective cover overhead would be the most effective. We will now focus on designing a cover that maintains the rustic and open feel of the site and minimizes the industrial feel of the existing design.

Two Projects completed at Dinosaur Ridge:

Privacy Fence adjacent to the Rooney Ranch -- The following Boy Scouts have completed the construction of 400 lineal feet of fence adjacent to the Rooney family homes: Peter Kim, Ben Frymier, Tom Manuson, Patrick Roby and Andrew Weller will be finishing their 100 foot long portions of the fence by the end of the year. Funds (\$7,200) for this project were provided by Jefferson County's Conservation Trust Funds.



Status of the New Visitor Center for Dinosaur Ridge

At the October 18th meeting, Sam and Joe also discussed Jefferson County's concern about the design of a new visitor center on the east side of Dinosaur Ridge. We are focusing our efforts on "Grandma Rooney's" site west of our current visitor center, while the county is concerned that this site cannot be seriously considered until Rooney Road is realigned to the east of Rooney Gulch. There is another five-acre site south of Alameda and west of Rooney Gulch that is currently zoned for a visitor center but owned by the Three Dinos. We don't think this site should be seriously considered unless the Rooneys are supportive of this idea and the property changes hands.

Lariat Loop Bicycle Racks -- Dinosaur Ridge purchased three bicycle racks from the Lariat Loop National Scenic Byway and installed them at our our visitor center. These racks cost Dinosaur Ridge only \$50 each because the \$200 cost of the racks was supplemented by a grant from the Federal Department of Transportation to Lariat Loop. Fifty bicycle racks will be installed along the 40-mile loop in October and November.



— JOE TEMPEL



MANAGEMENT REPORTS

PROGRAM DIRECTOR'S REPORT THIRD QUARTER 2012

Visitation, Attendance and Sales

Program	2011 (YTD)	2012 (YTD)	Change
Visitors to Dinosaur Ridge*		77,262	
Walkers on Ridge		35,086	
Visitors to Visitor Center	50,347	57,116	+13%
Tours (Total Attendance)**	32,4333	38,721	+19%
Trek Through Time	19,482	19,340	-1%
Dinos Discovery Days (5)	5,550	2,900	-47%
Traveling Exhibit Visitors	2,700	11,000	+307%
Sales (\$)***	\$ 278,554	\$ 312,684	+12%

*includes walkers plus tour attendance. Does not include bicyclists.

**includes attendance for guided school tours, shuttle bus tours, school outreach, "Walk with a Geologist," birthday parties, and teacher enrichment classes.

***includes receipts from Gift Shop, Shuttle Bus, Trek Through Time, School Tours, Birthday Parties, Walk with a Geologist, Teacher Classes, and Facilities Rental.

Visitors to Dinosaur Ridge was calculated using data from an electronic counter installed at Eastgate during the first week of January. Counts support previous estimates of visitation on the Ridge.

Tours attendance remains strong, particularly for school tours, school outreach, shuttle tours, and birthday parties.

Sales increases were led by the Gift Shop and Shuttle Bus Tours.

DDD-Reptile Day, July 14

On a very hot day 700 visitors enjoyed reptiles brought to Dinosaur Ridge by **Morrison Natural History Museum, Canyon Critters**, and the **Denver Zoo**. Raptors from rescue group **Wild Wings** excited them as well.

At **Thunder Valley**, north of our Visitor Center, a special event with thousands of guests, obstacle courses, and zombies made parking a mess. Fortunately, the **Three Dinos** helped by allowing FODR customers to park in the pasture east of the Visitor Center. The reintroduction of the popular hands-on activity, "Oil Spill Cleanup with Reptile Rescue" was also messy, but instructive. Thanks goes to these partners and our volunteers.

Continued on next page

MANAGEMENT REPORTS

Continued from previous page

DDD-Geocaching, August 11

Thanks to the **Greater Denver Area Gem and Mineral Council** for sponsoring this event and giving out specimens to the kids among the 600 visitors. Thanks to event partner **Geocaching Colorado** for promoting the day on geocaching.com as an event cache. Several of their members attended and introduced a number of novices to this increasingly popular hobby. Thanks to the **United States Geological Survey** for loaning GPS devices to visitors. Thanks to the volunteers from Geocaching Colorado and Friends of Dinosaur Ridge.

DDD-Geohazards, September 8

In celebration of National Preparedness Month organized by the Federal Emergency Management Administration (FEMA), 400 visitors attended this new event to learn more about geologic hazards, preparedness, and response. Several participants brought booths: the **Kaufman Agency** provided information about hazard insurance, **RDS Environmental** talked about radon testing and gave out free test kits, and the **Colorado Geological Survey**, experts on most geohazards, talked about landslides. Unfortunately **West Metro Fire** was slated to bring a fire truck and present information on wildfires, but had to respond to a car accident on Highway 93 at the west entrance to Dinosaur Ridge. Board Member **Norb Cygan** presented uranium mining and the hazards of radioactivity; Board President **Sam Bartlett** talked about earthquakes, faults and response to temblors; volunteer educator **Steve Hart** presented swelling soils; and volunteers **Bill Clapper** and **Richard Kerr** used the ash layer on the Ridge Trail to discuss the dangers of volcanoes and volcanic ash. **Xcel Energy** sponsored this event and also provided 12 employees as volunteers, some of whom stayed for an extra shift. Thanks to Xcel, the aforementioned participating partners, and all of the Xcel and FODR volunteers. After the event FODR received a certificate of appreciation from the **Department of Homeland Security**.

DDD-Girl Scouts, National Fossil Day, October 13

Clouds, wind, and intermittent rain made for a chilly event attended by 550 visitors, about half of whom were Girl Scouts and their family members. Thanks to the event sponsors, **Rocky Mountain Association of Geologists** and the **Association for Women Geoscientists**. Thanks also to the following organizations and their helpers for joining a record number of educational booths:

Legendary Ladies

National Park Service

United States Geological Survey

Lookout Mountain Nature Center (Jeffco Open Space)

Colorado School of Mines Geology Museum

Women in Mining

Girl Scouts of Colorado (checkin/registration)

Butterfly Pavilion

Women in Science (Colorado School of Mines)

Over 80 volunteers from the above groups, the **Boys and Girls Clubs of America**, and the Friends of Dinosaur Ridge presented to an enthusiastic group of Daisies, Brownies, and Girl Scouts, as well as close to 100 visitors from outside the Metro Area. Thanks to all who helped.



—TOM MOKLESTAD

CALENDAR OF EVENTS

FRIENDS OF DINOSAUR RIDGE EVENTS

Saturday and Sunday, December 1-2, 2012 – Introduction to Paleontology & Geology -- Chevron Classroom, 8:00 am to 5:00 pm. This two-day course, designed for beginners and experienced non-scientists, will introduce participants to the fundamentals of paleontology and the geological concepts most useful in paleontological interpretations. It will include field trips to Dinosaur Ridge and *Triceratops* Trail. Instructor: Dr. Lou Taylor. Cost: \$75 for FODR members; \$100 for non-members. For information or to register contact Amber Cain at amber_cain@dinoridge.org or 303-697-3466 X107.

Tuesday, December 4, 2012 – Colorado Gives Day – A day set aside for the citizens of Colorado to donate to local charities. Friends of Dinosaur Ridge is on the list of charities. To donate on this day, go to www.givingfirst.org. First Bank donates \$300,000 that is divided among the various charities based on the total donations each receives.

Wednesday, January 16, 2013 – FODR Board Meeting – Chevron Classroom, 6:30 p.m.

Friday, January 18, 2013 – Ridge Report Deadline for Volume 24, Issue 4, (2012 Annual Report).

Friday, April 19, 2013 – Ridge Report Deadline for Volume 25, Issue 1.

Saturday, May 11, 2013 – Dinosaur Discovery Day (DDD)-Boy Scout Day. Scouts earn badges, pins, and beltloops. Public welcome. 10am-3pm.

Saturday, June 8, 2013 – Dinosaur Discovery Day (DDD)-National Get Outdoors Day. 10am-2pm.

Saturday, July 13, 2013 – Dinosaur Express at the Colorado Railroad Museum. FODR will host 10-12 booths at this event. 9am-5pm.

Friday, July 19, 2013 – Ridge Report Deadline for Volume 25, Issue 2.

Saturday, August 10, 2013 – Dinosaur Discovery Day (DDD). Theme TBA. 10am-2pm.

Saturday, September 14, 2013 – Dinosaur Discovery Day (DDD). Theme TBA. 10am-2pm.

Saturday, October 12, 2013 – Dinosaur Discovery Day (DDD). Girl Scout Day/National Fossil Day/Colorado Astronomy Day/National Archaeology Day. Girl Scouts must register. Public welcome. 10am-3pm.

Friday, October 18, 2013 – Ridge Report Deadline for Volume 25, Issue 3.

Friday, January 17, 2014 – Ridge Report Deadline for Volume 25, Issue 4 (2013 Annual Report)

CALENDAR OF EVENTS

OTHER EVENTS

Saturday, December 1, 2012 – Western Interior Paleontological Society -- Holiday Auction and Potluck – Lutheran Church of the Master, 14099 W. Jewell Avenue, Lakewood (Alameda and Kipling) -- Find books, fossils, field gear, and more in this fundraiser that benefits WIPS grants and scholarships for education and research in paleontology.

Saturday and Sunday, March 16 and 17, 2013 – Western Interior Paleontological Society – Biennial Symposium, *Ice Worlds and Their Fossils*, Green Center at Colorado School of Mines – www.westernpaleo.org -- select “symposium”. **Friends of Dinosaur Ridge is a sponsor of this event.**

Many may know about “The Ice Age,” usually a reference to Earth’s most recent global cold snap that abated 12,000 years ago. Fewer people know that the last two million years may have seen 50 or more glacial advances and retreats—and that glacial climates are far from a recent phenomenon in Earth’s history. Over a dozen speakers will tell the story of how glaciations and ice ages have shaped life on our planet, including top scientists from organizations such as the Denver Museum of Nature & Science, the Smithsonian, and the National Oceanic and Atmospheric Administration.

“Ice Worlds and Their Fossils” will also offer an art gallery featuring the work of local natural science artists as well as exhibits from organizations such as the Friends of Dinosaur Ridge, and displays of fossils.

An early registration discount is available through January 7, 2013, and a highly discounted rate is available for students. The two-day event is \$75 for early registration and \$85 if registering after January 7th. One-day registration is \$40 until January 7th and \$50 thereafter. Student registration is \$15/day. For details and to register, visit westernpaleo.org and select “symposium.”

Ice WORLDS
and
THEIR FOSSILS

Founders Symposium
March 16-17, 2013

- Discover how glacial climates & life interact to shape evolution & the biosphere
- Presentations, poster sessions & displays
- Workshops on glaciers, ice age mammals & artist-scientist collaborations
- Fabulous gallery of paleo-art
- Student & early registration discounts

A Carboniferous snowfall

Pre-register NOW
at westernpaleo.org

Presented by the Western Interior Paleontological Society
symposium@westernpaleo.org • westernpaleo.org
Green Center, Colorado School of Mines, Golden

RECENT ACTIVITIES

A BOY MAKES A WISH

Three-year-old Anthony Lotton is a dinosaur fanatic. As is typical for a little boy, his favorite dinosaur is *Tyrannosaurus rex* and his favorite fossil is the coprolite (fossil poop). Little Anthony has Leukemia and his only Make-A-Wish desire was “something with dinosaurs”. This is when Dinosaur Ridge was able to help. On October 5th Anthony and his family flew in from Pittsburg to visit the Ridge with the Make-A-Wish Foundation on a chilly fall morning. Their goal: to see and touch real dinosaur fossils.

Erin LaCount gave the family and the Make-A-Wish staff a personalized guided tour of the Track Site and Bone Site while Bobbi Kilgore (who had arranged the program through Make-A-Wish and Kristin Lotton, Anthony’s mother) drove the Vanosaurus. After the tour Erin led the group through *Trek Through Time* where Anthony explored every touchable fossil and replica on display.

Dinosaur Ridge provided gift bags filled with patches, pins, books and toys for Anthony and his two sisters. The family couldn’t compliment us enough and the Make-A-Wish Foundation staff said they would recommend our site if any other dinosaur related requests come in.

Anthony is featured on the cover photo of this issue. We wish Anthony and his family the best as they face the future head-on.

— ERIN LACOUNT

NEW LIFE MEMBERS MAY AND DAVE RAYNOLDS



May and Dave Raynolds (parents of FODR Board Member Bob Raynolds) live on dinosaur-bearing ground in the Wind River Basin of Wyoming. They have long been strong supporters of experiential learning. Hundreds of school children per year visit their buffalo herd and have the chance to hand feed the critters. The students feel the coarse texture of the tongues as they feed molasses-flavored pellets into hungry maws. At Dinosaur Ridge school children can feel the texture of the tracks and the bones--this creates memories that last lifetimes.

— BOB RAYNOLDS

FRIENDS OF DINOSAUR RIDGE AT DENVER GEM & MINERAL AND FOSSIL SHOWS

Erin LaCount, Merlin and Cindy Barnes, Alan Founie, Bill and Berkhan Clapper, and Tom Mokles-tad represented FODR with a booth at the Denver Gem and Mineral Show September 14-16 and at the Fossil Expo September 12-16. These are only two of the many events at which FODR has a presence. Kids especially enjoy the FODR display. The Gem and Mineral Show booth prominently displayed the *Tyrannosaurus rex* foot recently donated by Martin Lockley.



Erin LaCount, Dr. Libby Prueher, and T. rex
at the Denver Gem & Mineral Show

RECENT ACTIVITIES

UTAH, DINOSAURS, AND KEN . . . OH MY!

Dinosaur Ridge's first trip in years to Vernal, Utah, was an amazing, informative trip led by Amber Cain and Erin LaCount. Twenty-two travelers left Dinosaur Ridge for this adventure, which began with a five-hour drive through mesmerizing geological scenery, on Friday morning, October 19. Saturday began with a guided tour of the Utah Field House of Natural History State Park Museum. **Guide Mary Beth** showed us new discoveries, including one of the largest *Stegosaurus* scapulas yet recovered. In the Jurassic Hall, we saw *Haplocanthosaurus* bones (some showing signs of arthritis) and this dinosaur's spoon-shaped tooth. Only five partial skeletons are known of this creature!



Our group at the Utah Field House of Natural History State park Museum

We all were envious of the great display of fossils from the Green River Formation exhibited in Eocene Hall. We also viewed a local stratigraphic column, the florescent mineral hall, local Native American artifacts, and an outdoor dinosaur garden before heading to Dinosaur National Monument.

The National Park Service has a new Visitor Center. Opened in 2011, it replaced the old building that was damaged by unstable soil. The new center is separate from the well known quarry or "wall of dinosaurs."

Wow! Knowing we were going to see a wall of dinosaur bones did not prepare us for what we saw. The wall displays over 1500 bones; most are as they were deposited. Seeing so many articulated vertebrae was, by itself, simply amazing. With Erin's help, we learned to visually separate the T-shaped

Stegosaurus vertebrae from those belonging to sauropods. We easily spotted the signature *Camarasaurus* skull, but a second skull that Mary Beth had told us to look for on the far left of the wall eluded us until **Carla, an interpretive ranger**, showed us the back of a sauropod skull only beginning to make its debut. Carla also pointed out *Stegosaurus* vertebrae and plates, sauropod ribs, a *Champsosaurus* jaw, and a fossilized log. She seemed happy to be surrounded by people as knowledgeable and crazy about dinosaurs as she was! We left the quarry with a few unanswered questions. Why are sauropods called sauropods? Erin later explained that "sauropod" means lizard foot and that it's an unfitting name. How did all of these dinosaur bones end up at Dinosaur National Monument? We learned that even later.



The "wall of dinosaurs"

We met after dinner for a lecture by vertebrate paleontologist **Dr. Kenneth Carpenter**, Director of The Prehistoric Museum, USU Eastern in Price, Utah. Ken's talk was titled *Big Dead, Stinky Things: The Taphonomy of Dinosaur National Monument (or how did those bones get there, anyway?)*.

Dr. Carpenter told us that there have been many studies done on the bones at Dinosaur National Monument, but none really addressed the heart of the matter -- how the bones got there? What led to such a large accumulation of bones from multiple species, both carnivore and herbivore? To answer

Continued on next page

RECENT ACTIVITIES

Continued from previous page

this question, Ken examined possible factors such as herds of dinosaurs drowning in river crossings, disease, and natural causes, but found that none of those factors led to the vast species diversity seen in the “wall of bones.” Only one possible factor stood out -- drought.

He explained that today in Africa a wide variety of carnivores and herbivores come together for a single reason -- to find water. Also, in times of drought animals tend to die near where water would have been, providing for different stages of decomposition and varying levels of articulation. Images from drought-ridden Africa, showing the different levels of decay and articulation are analagous to the various levels of articulation seen in the bone quarry at Dinosaur National Monument.

The remaining problem was to determine the method of burial. Most researchers have proposed burial by a river, but haven't specified the type of river: meandering, braided, or anastomosing. Ken's examination of the sedimentary structures in the sandstone of the bone quarry has led him to conclude that the dinosaur bones here were most likely buried by aquatic dunes in a braided stream system.

At the end of the night, Ken challenged Dinosaur Ridge to institute a study of the sediment in Arthur Lakes' quarries to determine the environment of deposition. If you know of any college students looking for a thesis topic, let us know.

Early Sunday morning the group hiked the Fossil Discovery Trail in Dinosaur National Monument. The trail includes many stops where we saw fossils in different formations: fish scales in the Mowry Shale, a vertebral column and a femur in the Morrison Formation, and abundant tiny clams in the Stump Formation. After one last picnic lunch, we all headed back to Morrison. This trip was a wonderful chance to get together some of the amazing volunteers at Dinosaur Ridge. We hope to have more volunteer trips in 2013.

— AMBER CAIN



Dr. Kenneth Carpenter addressing our group

COMMITTEE REPORTS

EDUCATION COMMITTEE

Summer was very busy around Dinosaur Ridge as thousands of visitors from around the country and the world came to learn about our special fossils.

Thirty-one teachers from across Colorado took part in geology/paleontology courses offered through the Colorado School of Mines. Teachers from as far away as Grand Junction and Colorado Springs examined the unique rocks and fossils found at the Ridge. The accompanying photo shows some of the teachers observing and studying the Benton Shale to determine the environment it represents.

By the end of September over 11,000 K-12 students had visited the Ridge on school tours led by the knowledgeable volunteer guides who dedicate many hours to this endeavor.

Funds from the **Mikkelson Education Fund, Subaru of America**, and donated instructors' salaries help replenish the Turner Fund which allows students from schools with 50% or more of their students on the free and reduced lunch schools to participate in our tours at no cost. If you haven't visited the *Trek through Time* exhibit at our Visitor Center lately, come see the many new exhibits, including the juvenile *Camarasaurus* in the entry way and a *Brachiosaurus* skull, both donated by the University of Colorado at Denver. Our *Goniopholis*, a close relative of the crocodile, recently appeared in the video about Arthur Lakes, who first collected dinosaur bones on Dinosaur Ridge. Be sure to stop by soon and learn more about these exciting new specimens!

— MARSHA BARBER AND LOU TAYLOR



COMMITTEE REPORTS

MARKETING COMMITTEE

In the third quarter, and continuing into October, FODR representatives attended 15 community outreaches, including a record four in a single day on Saturday, September 15. We were welcomed at three county fairs and several fall festivals. We also participated in three deal-of-the-day type promotions of our membership program: AAA website, sweetjack.com on Clear Channel radio stations, and Dealchicken® on Channel 9, resulting in a total of about 75 new members. In late September we surpassed 1200 fans on Facebook®.

—TOM MOKLESTAD

VOLUNTEER AND MEMBERSHIP COMMITTEE

Volunteer Sub-committee

FODR held multiple training sessions in September on Dinosaur Ridge, *Triceratops* Trail, and the *Trek Through Time* exhibit hall. Thanks for all of you who attended. New and potential volunteers who attended were introduced to many useful tips and ideas, many of which came from the number of experienced guides who joined in on this training. Thanks to **Amber Cain** for organizing these sessions.

— KERMIT SHIELDS

RESEARCH & PUBLICATIONS COMMITTEE

FODR recently released the documentary video, *Arthur Lakes: Discovering Dinosaurs*, a Dr. Beth Simmons brainstorm carried off with excellence and precision.

Financial assistance from the **Scientific and Cultural Funding District**, **The Greater Denver Area Gem and Mineral Council**, and the **John Kelly Fund** at Dinosaur Ridge made this movie possible. **Lakes family members** provided support through photos and costumes. The **Yale Peabody Museum** provided dozens of photos and digital reproductions of letters from collectors and Lakes' paintings, as did the **Colorado School of Mines Arthur Lakes Library**. From the **Colorado School of Mines Geology Museum** came specimens Lakes collected in the 1870s. The **Denver Public Library** and **History Colorado** provided many historic photographs.

Actors were volunteers from Dinosaur Ridge, led by **George Daggett** playing Arthur Lakes. **Fred Olsen** played Benjamin Mudge; **Doug Rouse** from Colorado Springs made a perfect Edward L. Berthoud. Two CSM students played Jarvis Hall and CSM students in the movie - **David Long** was George Cannon and **Tyler Rockley** was Peter T. Dotson, who discovered the first *T. rex* tooth. Oyster-eating **Bryce Primavera** enacted Will Nugent, a young local man who discovered one of the dinosaurs, and young **Matt Jessup** and **Collen Green** were two other Jarvis Hall students. Other actors included FODR President **Sam Bartlett**, board members **John Ghist** and **Norb Cygan**, and past presidents **Dr. Pete Modreski** and **Dan Green**. **Joe Payne** played Alex Young, the manager of the Morrison Lime, Stone, & Town Company; **Richard Kerr** played a capable carpenter; and **Jon Northern** was a lecture attendee. Ladies in the movie - **Jane Dianich**, **Laurie Primevera**, **Kathy Honda**, **Diane Hollenbeck**, **Linda Barton**, and **Idella Lewis** - acted as the surprised "incredulous" women from Morrison and Denver. Ranging in age from 93 (**Frances Lewis**) through mid-aged (**Karen Eberhardt** and **Linda Evans**) to young **Christina High**, the women in the film brought the reality of the community's involvement into the tale.

Narrator **Wendy Wham** from Greeley told the story from the modern perspective, alternating lines with **Dr. Martin Lockley**. **John Townrow's** distinctive British accent allowed him to read Arthur Lakes' lines as though he was relating the story by Lakes late in life.

Barry Ahlgrim provided original banjo music; other tunes came from the Borscht Brothers (with **Dr. Bruce Geller** and his mandolin), **Jan McKinney** on the local church's pump organ, and **Dan Menich**, a pianist from Silverton.

The film crew did a magnificent job of capturing the essence of the discoveries. **Dr. Larry Jankowski** and **Marjie Payne** took most of the footage. **Marjie Payne** amazingly edited the hours of tape and audio into the final hour-long production - her first big work (we hope it is not her last!)

Congratulations, everyone, for a job WELL DONE!

-BETH SIMMONS

ARTICLES

TOUR GUIDE CORNER: TIMING IS EVERYTHING

Tour timing and logistics are important issues that we constantly need to keep in mind. It seems that we who lead tours always have so much to say and too little time in which to say it. My recent observations indicate that, although presentation quality and the accuracy of information are usually not a problem, timing and logistics need a little work. The tips below may help:

Some tips on timing

If you are leading a tour with more than one guide, especially if you're involved in a mega-tour, work out the timing before the tour starts.

Instead of saying "let's each talk about 15 minutes" it is better to pick a time for the buses to move. For example, agree that the buses on both the west and the east sides will be loaded and will start moving at 10:45.

Ask one of the teachers to be your time keeper; it is far too easy for us to lose track of time and it is distracting if we keep looking at our watches.

Be sure to ask if the bus drivers have a hard deadline for leaving, or if their departure time is flexible. However, even if the timing is flexible, keep your talk short and focused. Remember - young children have a short attention span.

A few logistics tips

Always check to be certain that you closed the gate behind your tour.

If you are not riding on the bus, instruct the driver about rules of the road on the Ridge and let them know where they should be for the next stop.

Always include a safety briefing for each tour.

— KERMIT SHIELDS

THE TINIEST SPECIMEN?: A FORAM FROM DINOSAUR RIDGE

Dinosaur Ridge is renowned for its fossil plants, dinosaurs, and tracks, but these fossils are huge compared to what is perhaps the smallest specimen from Rooney Gulch, *Verneuilina canadensis* Cushman, 1927 (Figure 1). This fossil is a microscopic foraminiferan collected by **Dr. Don Eicher** in the rock unit once called the Graneros Shale, but which is now considered to be a unit of the Benton Shale. Located at NE1/4 Sec. 26, T4S, R70W, in a deep gully immediately east of the Alameda Road Cut through the Dakota Hogback, 1.5 miles north of Morrison in Jefferson County, the Graneros Member measured 104 feet (31.7 meters) thick, and was entirely sampled during Eicher's study. It rested on 15 feet (4.6 meters) of Mowry Shale and was overlain by a three-foot (0.9 meter) thick marker bentonite bed. Glenn Scott mapped all of these rock units on his geologic map of Morrison.

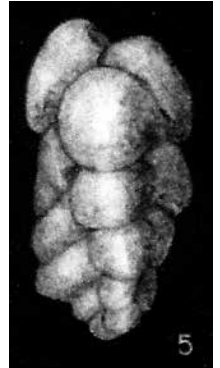


Figure 1. *Verneuilina canadensis* Cushman, #UCM25106, From Eicher (1965), Plate 105 #5, site 14.

Continued on next page



Figure 2. Oblique aerial view over the Dakota Hogback, looking east in 1963. Rooney Gully that Eicher sampled is in the background. Photo by Dave MacKenzie.

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What gully you ask? As you look east from the top of the Ridge, there is no gully, only the trace of a small stream, Rooney Gulch, that follows the Golden Fault south to Bear Creek. Remember that Eicher's study was done long before the construction of C-470 changed the landscape of the Rooney Valley. An oblique aerial photo to Dave McKenzie took in 1963 clearly shows the gully wall that Eicher sampled (Figure 2).

Do you also wonder what a foram is? Members of the Phylum Foraminifera (d'Orbigny, 1839) and the Kingdom Protist, they are single-celled marine organisms that construct a shell ("test") of calcium carbonate (CaCO₃) or agglutinated particles such as sand. Planktonic forams float at various levels in the sea and benthonic forams live either on or within the sediment of the seafloor. They are useful in biostratigraphic, paleoclimatological, and paleoceanographic studies.

The planktonic *V. Canadensis* and its associated agglutinated fauna indicated that the Graneros Shale here was deposited in turbid brackish water. The fresh water probably originated as runoff from the adjacent land, perhaps in a lagoon or other nearshore environment. Immediately above the Graneros Shale is the Greenhorn Limestone; the forams Eicher studied in the Greenhorn indicated normal oceanic water conditions as the Western Interior Seaway encroached over the land.

Don't geologists learn lots from little things?

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-BETH SIMMONS

LAKES TO THE LIMIT: A REVIEW

The Friend's latest venture into production cinematography has culminated in the feature length historical drama *Arthur Lakes: Discovering Dinosaurs*. The wonderful story of discovery and the excitement created by the amazing new fossil behemoths unfolds for the viewer through precisely reconstructed events and personalities. Famous names I have only known from the literature now stand in front of me, vivid, real to life, and become my friends.

Over ten years of research on Arthur Lakes by **Dr. Beth Simmons** and her team has allowed the accurate reconstruction not only of

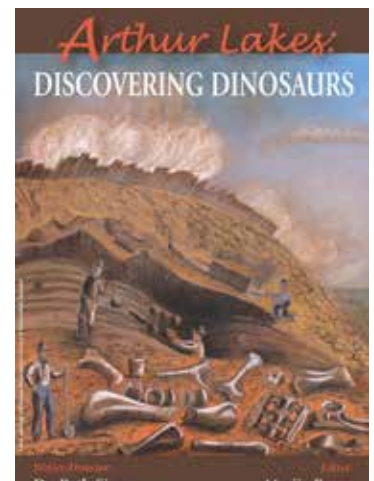
the scene and settings, but also of the chronology of discovery and the gradual recognition by the East Coast academic community of the value of the new bones being unearthed in Colorado. We join the early bone hunters in their often dangerous quest for bones and in their effort at attracting the attention of the Eastern paleontological establishment dominated by arch rivals Philadelphia Academy of Science's Edward Drinker Cope and Yale University's Othniel Charles Marsh. Our hero, Reverend Lakes, is savvy enough to engage both paleontologists and he eventually shares his finds with the one showing the greatest interest (and financial backing).

The viewer is transported to the scene...huge bones are discovered as we watch! The excitement of Arthur Lakes and his colleagues as well as that of the local community is palpable. The bones are first displayed right in Morrison and the videographers take us to the drawing room of the local hotel to feel the pulse of the community as the hotel guests and residents realize that giant beasts once roamed the peaceful valley of Morrison. We go to the store house and unlock the door to get a first-hand view of the early recovered specimens. Careful not to drop them!

In our digital time it is hard to picture the 1870's, though only four or five generations past. By showing the actual letters and bringing to life the principal characters with local actors, the film allows us to pause for a moment and paint vivid pictures of what the scene was once like at Dinosaur Ridge.

At the end of the film, some of today's greatest paleontologists and museum curators -- **Dr. Kenneth Carpenter, Dr. Martin Lockley, Dr. Robert Bakker, Nick Drew**, a young paleontologist from Yale, and **Dr. Bruce Geller** -- summarize Lakes' work and show how the discoveries at Dinosaur Ridge and in Golden paved the way for future dinosaurial science.

The video is both entertaining and educational and promises to be a great resource for all interested in the history of Dinosaur Ridge. The video serves as a research tool to help place the paleontological resources of Dinosaur Ridge, part of the Morrison-Golden Fossil Areas National Natural Landmark into context and can be used in schools throughout the Front Range region to help young people understand the dramas that have unfolded here in their communities.



-BOB RAYNOLDS

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Individual Membership -- \$25.00 -- 10% discount in FODR gift Shop, *Ridge Report* and *E-Trax*

Family or Group Membership -- \$40.00 -- Individual benefits, Free bus tours, Free admission to *Trek Through Time* for up to four people per visit

Sponsor Membership -- \$100 - \$249 -- Family or Group benefits for up to ten people per visit, Recognition on a plaque in the exhibit hall

Tyrannosaurus Membership -- \$250 - \$499 -- Sponsor benefits, one ticket to the annual Rock Out for the Ridge fundraising dinner

Apatosaurus Sponsorship -- \$500 - \$999 -- Tyrannosaurus benefits, one additional ticket to the annual Rock Out for the Ridge fundraising dinner

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